

Remarks

By the present amendment and response, Applicants have amended claims 8, 15, and 35; cancelled claim 42; and added new claims 62-65. Claims 1-7, 19-21, 24-34, and 36-41 were cancelled previously. Consequently, claims 8-18, 22, 23, 35, 43-45, 49, and 52-65 are pending in the present application, with claims 8, 15-18, 22, 35, 43-45, 49, and 62 being independent claims. No new matter has been added. To the extent that any excess claim fees are owed as a result of the present amendment, authorization to charge Deposit Account 502454 for such fees is hereby given.

I. Allowable Subject Matter

The Office Action mailed on December 23, 2004 indicated that claims 16-18, 22, 43-45, and 49 were allowed (Office Action, pg. 7). Applicants thank the Examiner for the allowance of such claims.

II. Claim Rejections

Claims 8-15, 23, 35, 42, and 52-60 were rejected under 35 U.S.C. § 103(a) over various combinations of references. Claim 42 has been cancelled herewith so it is believed that the rejection of that claim is moot. With the amendment of independent claims 8, 15, and 35, it is believed that these claims, along with dependent claims 9-15, 23 and 52-60, are now in condition for allowance. Further discussion of the effect of the present amendments relative to the cited references is provided below.

A. Rejection of claims 8-14, 23, and 52-60

Claims 8-14, 52-58, and 60 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Soga (US 2003/0230524 A1) in view of Bruno-Raimondi (US

6,437,354 B1), Wolk ("Ultraviolet Absorbance Spectroscopy in 3-Dimensional Microfluidic Chip"), Gilby (US 5,900,934), and Druy (U.S. 6,289,149). Similarly, claims 23 and 59 were rejected under 35 U.S.C. § 103(a) over the same combination of references, but further in view of Miroslav (U.S. 6,296,771). All of claims 9-14, 23, and 52-60 depend, whether directly or indirectly, from claim 8.

Claim 8 has been amended to require that each detection has an internal cavity, and:

"each fiber optic conduit of the plurality of fiber optic conduits has a first end that bounds a portion of the cavity of a different flow-through detection region of the plurality of detection regions."

(Emphasis added.) Support for this limitation is found in the detailed description, for example, in paragraph [0086], at page 17, lines 13-15: "(t)he fibers 612, 614 and conduits 616, 618 are positioned so as to bound portions of a detection chamber without requiring further optical windows" See also paragraphs [0089]-[0090], at page 18. Potential benefits of such direct coupling include simplified manufacturing, reduced dead volume, and/or reduced signal attenuation.

None of the references supporting the present rejection of claim 8 disclose a fiber optic conduit having a first end bounding a portion of a cavity of a flow-through detection region, as required by claim 8. Druy does teach a spectroscopic flow cell that uses fiber optic conduits, but Druy expressly requires (see Druy claim 1) the use of "symmetric concentrators" (i.e., lenses) disposed between the fiber optic cables and the sample cell through which fluid flows. See, e.g., Druy, col. 2, lines 3-7; col. 2, lines 54-64. According to Druy, the "optical fibers 8 and 9 terminat[e] at the narrower ends of concentrators 4 and 5 respectively." Col. 2, lines 60-62; see also Druy Figure 1. The concentrators are preferably either compound parabolic concentrators or conical concentrators. See, e.g., Druy claims

5-6. Druy fails to teach or suggest the use of fiber optic conduits that directly bound flow-through detection regions.

Since no combination of the cited references teach or fairly suggest a fiber optic conduit having a first end that directly bounds a portion of the cavity of a flow-through detection region, as required by each of claims 8-14, 23, and 52-60, Applicants submit that such claims are allowable over the cited references and request that the 103(a) rejections of claims 8-14, 23, and 52-60 be withdrawn.

B. Rejection of claims 8-14, 23, and 52-60

Claims 35 was rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Soga (US 2003/0230524 A1) in view of Bruno-Raimondi (US 6,437,354 B1), Wolk ("Ultraviolet Absorbance Spectroscopy in 3-Dimensional Microfluidic Chip"), Gilby (US 5,900,934), and Druy (U.S. 6,289,149).

Claim 35 has been amended to require:

a first plurality of fiber optic conduits ... lenslessly optically coupled to the plurality of detection regions, each fiber optic conduit of the plurality of first fiber optic conduits being associated with a different detection region of the plurality of detection regions and transmitting radiation to its associated detection region along the flow axis

(Emphasis added.) None of the references supporting the present rejection of claim 35 disclose any fiber optic conduit lenslessly optically coupled to a flow-through detection region. As noted previously, Druy does teach a spectroscopic flow cell that uses fiber optic conduits, but Druy expressly requires "symmetric concentrators" or lenses disposed between the fiber optic cables and the sample cell through which fluid flows. See, e.g., Druy, col. 2, lines 3-7; col. 2, lines 54-64 & Fig. 1. Druy fails to teach or suggest the use of any fiber optic conduit that is lenslessly optically coupled to a detection region.

Since no combination of the cited references teach or fairly suggest a fiber optic conduit that is lenslessly optically coupled to a flow-through detection region, as required by claim 35, Applicants submit that the claim is allowable over the cited references and request that the 103(a) rejection of claim 35 be withdrawn.

C. Rejection of claim 15

Claim 15 was rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Soga (US 2003/0230524 A1) in view of Bruno-Raimondi (US 6,437,354 B1), Wolk ("Ultraviolet Absorbance Spectroscopy in 3-Dimensional Microfluidic Chip"), Gilby (US 5,900,934), and Druy (U.S. 6,289,149), further in view of Reed (U.S. 6,618,144).

Claim 15 has been amended to require that the wavelength selection element comprises a filter wheel having a plurality of discrete wavelength filters. Support for this feature is found in the detailed description, for example, at paragraph [00105], page 24, lines 9-14. A filter wheel permits the user to rapidly and easily select the desired wavelength to achieve desired analytical results.

In contrast, Reed discloses a parallel detector having multiple-subchambers in which an ordinary incandescent source with a suitable wavelength selecting filter for each sub-chamber is used. See, e.g., Reed, Fig. 8; col. 6, lines 42-45; col. 16, lines 49-58. Since Reed fails to teach or fairly suggest the use of a wavelength selection element comprising a filter wheel having a plurality of discrete wavelength filters, as required by claim 15, Applicants submit that the claim is allowable over the cited references and request that the 103(a) rejection of claim 15 be withdrawn

III. New Claims

New claims 61-65 are similar to other pending claims and claim further salient features of the invention. No new matter has been added.

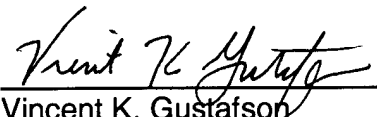
Conclusion

By virtue of the amendments and arguments provided herein, Applicants believe that all pending claims 8-18, 22, 23, 35, 43-45, 49, and 52-65 are in good condition for allowance, and respectfully request allowance thereof. Consideration of the enclosed Supplemental Information Disclosure Statement and references cited therein is also requested.

If any additional information should be required in considering this Response, or if there are any questions or deficiencies with regard to this Response that can be addressed by telephone, the USPTO representative is encouraged to contact the undersigned directly at (919) 419-9350.

Respectfully submitted,

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Encl: Supplemental Information Disclosure Statement w/ completed form PTO-1449 and copies of cited references